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2 sheets

## ELECTRONIC INFORMATION DISCLOSURE STATEMENT

Electronic Version v18

Stylesheet Version v18.0

Title of  
Invention

## POWER AMPLIFIER CIRCUITRY AND METHOD

Application Number : 10/812858



Confirmation Number: 3449

First Named Applicant: Susanne Paul

Attorney Docket Number: SIL.P0075

Art Unit: 2817

Examiner: Michael B. Shingleton

Search string: ( 4772856 or 5023566 or 5118997 or 5274341 or 5327337 or 5612647 or 5623231 or 5867061 or 5880635 or 5942946 or 5955926 or 5969582 or 5974041 or 6137273 or 5291123 or 4893030 or 4808907 or 6167134 or 6181207 or 5648743 or 5343162 or 4857865 or 5450036 or 5420537 or 5625205 or 5726603 or 6198347 or 6232634 or 6208549 or 6222788 or 6147511 or 4649467 or 5742205 or 5477188 or 6011438 or 6157258 or 5831331 or 6274937 or 6319829 or 6208875 or 5604383 or 6323735 or 5973368 or 6133793 or 6016075 or 4590436 or 6384540 or 4021751 ).pn

## US Patent Documents

Note: Applicant is not required to submit a paper copy of cited US Patent Documents

Int	Cite.No.	Patent No.	Date	Patentee	Kind	Class	Subclass
MS1	1	4772856	1988-09-20	Nojima et al.			
	2	5023566	1991-06-11	El-Hamamsy et al.			
	3	5118997	1992-06-02	El-Hamamsy et al.			
	4	5274341	1993-12-28	Sekine et al.			
	5	5327337	1994-07-05	Cripe			
	6	5612647	1997-03-18	Malec			
	7	5623231	1997-04-22	Mohwinkel et al.			
	8	5867061	1999-02-02	Rabjohn et al.			
	9	5880635	1999-03-09	Satoh			
	10	5942946	1999-08-24	Su et al.			
	11	5955926	1999-09-21	Uda et al.			
	12	5969582	1999-10-19	Boesch et al.			
	13	5974041	1999-10-26	Kornfeld et al.			
	14	6137273	2000-10-24	Bales et al.			
	15	5291123	1994-03-01	Brown			
	16	4893030	1990-01-09	Shearer et al.			
MS1	17	4808907	1989-02-28	Main			

11-1-05

Two sheets

18	6167134	2000-12-26	Scott et al.			
19	6181207	2001-12-30	Chevallier et al.			
20	5648743	1997-07-15	Nagaya et al.			
21	5343162	1994-08-30	Davis			
22	4857865	1989-08-15	Berman et al.			
23	5450036	1995-09-12	Nishioka et al.			
24	5420537	1995-05-30	Weedon et al.			
25	5625205	1997-08-29	Kusama			
26	5726603	1998-03-10	Chawla et al.			
27	6198347	2001-03-06	Sander et al.			
28	6232634	2001-05-15	Wu et al.			
29	6208549	2001-03-27	Rao et al.			
30	6222788	2001-04-24	Forbes et al.			
31	6147511	2000-11-14	Patel et al.			
32	4649467	1987-03-10	Vesce et al.			
33	5742205	1998-04-21	Cowen et al.			
34	5477188	1995-12-19	Chawla et al.			
35	6011438	2000-01-04	Kakuta et al.			
36	6157258	2000-12-05	Adishian et al.			
37	5831331	1998-11-03	Lee			
38	6274937	2001-08-14	Ahn et al.			
39	6319829	2001-11-20	Pasco et al.			
40	6208875	2001-03-27	Damgaard et al.			
41	5604383	1997-02-18	Matsuzaki			
42	6323735	2001-11-27	Welland et al.			
43	5973368	1999-10-26	Pearce et al.			
44	6133793	2000-10-17	Lau et al.			
45	6016075	2000-01-18	Hamo			
46	4590436	1986-05-20	Butler et al.			
47	6384540	2002-05-07	Porter, Jr. et al.			
48	4021751	1977-05-03	Suzuki			

**Remarks**

Note: Remarks are not for responding to an office action.

A paper IDS is being submitted concurrently with this electronic IDS.

**Signature**

Examiner Name	Date
SHINGLETON	3-6-06

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FORM PTO-1449

ATTY. DOCKET NO. SIL.P0075 SERIAL NO. 10/812,858

APPLICANT Paul et al.

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## REFERENCE DESIGN U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS
ABJ	20050052235	03/10/05	Paul et al.	1	1
ABJ	20050052236	03/10/05	Paul et al.	1	1
ABJ	20050052237	03/10/05	Paul et al.	1	1

## FOREIGN PATENT DOCUMENTS

	DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLAS	TRANSLATION	
						YES	NO
ABJ	WO 00/16492	03/23/00	Macnally et al.	1	1		✓
ABJ	WO 98/37627	08/27/98	Ledenev et al.	1	1		✓
ABJ	EO 399561	11/28/90	Clanahan et al.	1	1		✓
ABJ	DE 4419318	07/12/95	Grunecker et al.	1	1		✓

## OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, etc.)

ABJ	Sokal, N. O. and Sokal, A. D., "Class E - A new class of high-efficiency tuned single ended switching power amplifiers," IEEE Journal of Solid State Circuits, vol. SC-10, No. 3, June 1975, pp. 168-176.
ABJ	Makihara, Chihiro et al., "The Possibility of High Frequency Functional Ceramics Substrate", International Smposium on Multilayer Electronic Ceramic Devices, 5/5/98 in Cincinnati, Ohio.

EXAMINER SHINGLETON DATE CONSIDERED 3-6-06

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ATTY. DOCKET NO. SIL P0075

SERIAL NO. 10/812,858

APPLICANT Paul et al.

FILING DATE 3/30/2004

GROUP 2817

## REFERENCE DESIGNATION U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS
MBJ	4,067,057	1/3/78	Taddeo		
	4,451,802	5/1984	Koinuma		
	4,590,436	5/20/86	Butler		
	4,670,832	6/2/87	Park		
	4,689,819	8/25/87	Killion		
	4,689,819 Exam. certificate	8/13/96	Killion		
	4,691,270	9/1/87	Pruitt		
	4,736,284	4/5/88	Yamagishi		
	5,144,133	9/1992	Dudley et al.		
	5,276,910	1/4/94	Buchele		
	5,311,150	5/1994	Engbretson et al.		
	5,768,112	6/16/98	Barrett		
	5,771,166	6/23/98	Lim		
	5,939,931	8/17/99	Noro		
	6,016,075	1/18/00	Harno		
	6,072,362	6/6/00	Lincoln		
	6,147,886	11/14/00	Whittenbreder		
	6,300,827	10/2001	King		
	6,355,531	3/2002	Mandelman et al.		
MBJ	6,384,540	5/7/02	Porter		

## FOREIGN PATENT DOCUMENTS

	DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLAS	TRANSLATION	
						YES	NO

## OTHER REFERENCES (including Author, Title, Date, Pertinent Pages, etc.)

Webster's Ninth New Collegiate Dictionary, copyright 1991, pages 384 and 1096, definitions of "drive" and "signal."

EXAMINER

SHINGLETON

DATE CONSIDERED

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ATTY. DOCKET NO. SIL P0075

SERIAL NO. 10/812,858

APPLICANT Paul et al.

FILING DATE 3/30/2004

GROUP 2817

## REFERENCE DESIGNATION U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS

## FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLAS	TRANSLATION	
							YES	NO

## OTHER REFERENCES (including Author, Title, Date, Pertinent Pages, etc.)

MBS		Broskie, The Accordion Amplifier -A new single-ended topology, published 2001, Tube Cad Journal.
		Billings, Switchable Power Supply Handbook McGraw-Hill 1999.
		Grant and Gowar, Power MOSFETs Theory and Applications, Wiley 1989.
		Cuk and Middlebrook, Advances in Switch-Mode Power Conversion Vol III, Teslaco 1983.
		Hamill, Class DE Invertors and Rectifiers for DC-DC Conversion, Power Electronics Specialist Conference, June 1996, 8 pp.
		Tomescu, A Unified Approach to Class E versus Quasi-Resonant Switch Topologies, IEEE Transactions on Circuits and Systems - II: Analog and Digital Signal Processing, Vol. 45, No. June 1998, pp. 763- 766.
MBJ		Pressman, Switching Power Supply Design, McGraw-Hill 1998, pp. 86, 101, 167, 176-177 and 482.

EXAMINER

SHINGLETON

DATE CONSIDERED

3-6-06

2/3/06

four sheets

FORM PYO-1449

ATTY. DOCKET NO. SIL P0075

SERIAL NO. 10/812,858

APPLICANT Paul et al.

FILING DATE 3/30/2004

GROUP 2817

## REFERENCE DESIGNATION U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS

## FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLAS	TRANSLATION	
							YES	NO

## OTHER REFERENCES (including Author, Title, Date, Pertinent Pages, etc.)

MBJ	Zulinski and Grady, Load-independent Class E Power Inverters: Part I Theoretical Development, IEEE Transactions on Circuits and Systems, Vol.37, No. 8, Aug. 1990, pp. 1010-1018.
	Albulet, An Exact Analysis of Class-DE Amplifier at any Output Q, IEEE Transactions on Circuits and Systems - I: Fundamental Theory and Applications, Vol. 46, No. 10, Oct. 1999, pp. 1228-1239.
	Koizumi, Sekiya, Matsuo, Mori and Sasase, Resonant DC/DC Converter With Class DE Inverter and Class E Rectifier Using Thinned-Out Method (Deleting Some of the Pulses to the Rectifier), IEEE Transactions on Circuits and Systems - I: Fundamental Theory and Applications, Vol. 48, No. 1, Jan. 2001, pp. 123-126.
	Kazimierczuk and Jozwik, DC/DC Converter with Class E Zero- Voltage-Switching Inverter and Class E Zero-Current-Switching Rectifier, IEEE Transactions on Circuits and Systems, Vol. 36, No. 11, Nov. 1989, pp. 1485-1488.
	Kazimierczuk and Szaraniec, Class D-E Resonant DC/DC Converter, IEEE Transactions on Aerospace and Electronic Systems, Vol. 29, No. 3, Jul. 1993, pp. 963-976.
	Kazimierczuk, Class-E Amplifier with an Inductive Impedance Inverter, IEEE Transactions on Industrial Electronics, Vol. 37, No. 2, Apr. 1990, pp. 160-166.
MBJ	Lee, Kim, and Chung, Control of PWM Current Source Converter and Inverter System for High Performance Induction Motor Drives, Proceedings of the 1996 IEEE IECON 22nd International Conference on Industrial Electronics, Control and Instrumentation, Aug. 1996, pp. 1100-1105.

EXAMINER

SHINGLETON

DATE CONSIDERED

3-6-06

2/3/06

four sheets

FORM PTO-1449

ATTY. DOCKET NO. SIL.P0075

SERIAL NO. 10/812,858

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FILING DATE 3/30/2004

GROUP 2817

REFERENCE DESIGNATION U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS
1					

FOREIGN PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLAS	TRANSLATION	
						YES	NO
1							

OTHER REFERENCES (including Author, Title, Date, Pertinent Pages, etc.)

MB,		Ballan and Declercq, 12V $\Sigma$ - $\Delta$ Class-D Amplifier in 5V CMOS Technology, IEEE 1995 Custom Integrated Circuits Conference, pp. 559-562.
		Hajimiri and Lee, Design Issues in CMOS Differential LC Oscillators, IEEE Journal of Solid-State Circuits, Vol. 34, No. 5, May 1999, pp. 717- 724.
		Tsai and Gray, A 1.9-GHz, 1-W CMOS Class-E Power Amplifier for Wireless Communications, IEEE Journal of Solid-State Circuits, Vol. 34, No. 7, July 1999, pp. 962-970.
		Boonyaroonate and Mori, Analysis and Design of Class E Isolated DC/DC Converter Using Class E Low dv/dt PWM Synchronous Rectifier, IEEE Transactions on Power Electronics, Vol. 16, No.4, July 2001, pp.514-521.
		Broskie, The Accordion Amplifier -A New Single-Ended Topology, published 2001, Tube Cad Journal.
		Kazimierczuk and Czarkowski, Resonant Power Converters, John Wiley & Sons, Inc. 1995, pp. 149-150 & 188-189.
MB,		Severns and Bloom, Modern DC-To-DC Switchmode Power Converter Circuits, Van Nostrand Reinhold Company 1985, pp. 128-129.

EXAMINER

SHINGLETON

DATE CONSIDERED

3-6-06